REMARKS

Claims1-20 are pending in the present application. Claims 1-20 stand rejected. Claims 1, 8, 13 and 17 have been amended. Claims 1, 8, 13 and 17 are the independent claims. Favorable reconsideration is requested.

Claims 1,2, 5-14 and 17-20 stand rejected under 35 U.S.C. §103(a) as being anticipated by Summerell et al., U.S. Patent No. 5,937,387 ("Summerell") in view of Tanaka, et al., U.S. Published Patent Application No. 2002/0133441 ("Tanaka"). Additionally, claims 3-4 and 15-20 stand rejected under 35 U.S.C. §103(a) as being anticipated by Summerell in view of Tanaka, and further in view of Hammond et al., U.S. Patent No. 5,613,072 ("Hammond"). Applicants respectfully traverse the foregoing claim rejections.

As set forth in detail in the present application, Applicants' invention is directed to embodiments of a system and method for determining the importance of variables that contribute to the overall score of a model for predicting the profitability of an insurance policy. Initially, a pool of data, being values of a set of variables is collected. In creating the predictive model, the predictive variables that comprise the scoring formula or algorithm can be selected from this larger pool of variables for their statistical significance to the likelihood that a particular policyholder will have future losses. Once selected from the larger pool of variables, each of the variables in this subset of variables is assigned a weight in the scoring formula or algorithm based on complex statistical and actuarial transformations. The result is a scoring model that may be used by insurers to determine in a more precise manner the risk associated with a particular policyholder.

The system and method of the present claimed invention evaluate a scoring formula to determine the contribution of each of the individual predictable variables used in the

scoring formula to the overall score generated by the scoring formula. The system and method of the present claimed invention also quantify the contribution of each predictive variable to the score generated by the model by populating a database associated with the system with a mean value and standard deviation value for each of the plurality of variables, calculating a slope value for each of the plurality of variables, calculating a deviance based on the slope and standard deviation for each of the plurality of variables and multiplying the deviance value and slope value for each of the plurality of variables to quantify the contribution of each of the plurality of variables to the score. The quantified contribution may then be used to rank the variables by importance to the overall score.

Summerell describes embodiments of a system and method for developing a customized wellness plan for measuring a user's wellness by determining a user's physiological age. The interactive wellness system and method of Summerell collects information relating to the user's voluntary choices, habits, environments, disease transitions and genetic dispositions (wellness factors) and measures the user's wellness by determining his or her physiological age. In addition, the system and method of Summerell is capable of presenting the user with expert knowledge, know-how and resources to improve wellness, allowing the user to determine the effects varying combinations of wellness options could have on physiological age, allowing the user to choose the combination of wellness options that he or she wishes to follow, monitoring the user's progress toward improving wellness by measuring physiological age and incorporating new medical data and new user data into the system.

Summerell, which Applicants respectfully re-iterate is non-analogous art, is admitted by the Office Action as not describing the present invention as claimed in independent claim 1. As the Office Action admits, Summerell nowhere teaches or suggests means for

calculating the contribution of any of the plurality of variables based on the calculated slope and deviance values. Summerell is concerned with calculating physiological age for a user based on a user survival curve in order to create a customized wellness plan. Summerell at 15:6-16:35. Predetermined relative risk factors are used to modify the survival rate and mortality rate of the standard population in order to assess the physiological age of a user. The contribution of these relative risk factors is not calculated as part of the assessment of the physiological age. No multivariate statistical model is created from the various relative risk factors in Summerell so as to identify a set of predictive factors and generate a scoring formula based thereon, said scoring formula comprising at least a sum of a plurality of predictive variables each having a weighting co-efficient. As a result, Summerell is neither concerned with a scoring formula being a multivariate statistical model generated from an initial set of data nor with the importance of each contributing variable in such model. Rather, Summerell is instead focused on the final end result of a calculated physiological age.

In fact, the difference between Summerell and the claimed invention is clearly illustrated by comparing Table Two of Summerell with Fig. 5 of the present application specification. The relative risk, first relative risk adjustment and second relative risk assessment (columns 2, 4 and 6, respectively) in Table Two of Summerell are not even remotely comparable to the Importance (column 5) and Rank (column 6) of Fig. 5. As such, Summerell does not teach or suggest means for calculating the contribution of any of the plurality of variables based on the calculated slope and deviance values according to the present invention.

The Office Action seeks to correct the deficiencies of Summerell as a reference against the pending claims with Tanaka, asserting that Tanaka discloses "a process of generating

a multivariate statistical model from the values in the database and a scoring formula based thereon." Office Action at 3-4. Applicants respectfully traverse.

Tanaka describes comparing outcomes of financial processes with modeled outcomes:

> [0015] Another aspect of the invention includes a method for comparing the actual outcomes of the financial process (e.g., charges submitted, payments received) with modeled outcomes. Creation of the models can be performed either by the user or through the applied use of any suitable third party software designed for such use (e.g., CHARGEMASTER.RTM.). All relevant data elements are plotted on a X-Y coordinate graph with the modeled data arranged along the X-axis and the actual responses arrayed along the Y-axis. It is to be appreciated by even casual users that a model which accurately predicts the outcome will be characterized by a diagonal line characterized by a slope of 1 and a regression (r, a measure of variance) of 1.0. Statistically significant departure from the model indicates a need to perform follow-up statistical analyses to identify the most likely source(s) of the error. In this connection, it should be noted that significant deviations in slope often indicate single process errors while large variances about the common slope indicate the present of multiple error factors.
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> [0016] Assessing the relative contribution of each factor in the model together with the separate influence or impact of process errors (e.g., site of service) is achieved through the separate application of multivariate analysis. For example, in the healthcare industry, it may be desirable to determine why one site of service, such as a clinic, receives payment on insurance claims faster than another site of service. Conventional single-variable statistical analysis may be unsuitable for making this determination. However, multivariate analysis allows the user to assess the statistical likelihood that a factor or combination of factors contributes to the model's outcome or reduces model error. Once the statistically relevant factors are identified, each factor (or combination thereof) in the model is perturbed (adjusted by an arbitrary amount, typically by 10% of its nominal value) and the new model compared to the actual outcomes. This reiterative process is continued until the factor(s) most responsible for the residual error are identified. For example, in the clinic site time of payment scenario discussed above, multivariate analysis may indicate that clinic A receives payment on claims before clinic B because clinic A meets on Mondays and clinic B meets on Fridays. .

Tanaka at ¶¶ [0015-0016] (emphasis added).

Tanaka does not describe the creation of a multivariate individually weighted scoring formula from the larger set of collected data and then assessing the contributions to the formula of the various variables in the formula using various derived quantities from said predictive variables and their respective weights in the model, as in the claimed invention. Thus, Tanaka does not calculate for example, a set of calculated partial derivative and deviance values for each predictive variable so as to quantify the contribution of each such predictive variable, as in claim 1. Tanaka goes outside of the model itself to assess the accuracy of the model. Tanaka assumes a less than accurate model is created, and then, to better train the model, uses perturbations of that model compared with actual outcomes until the factors most responsible for the residual [model] error are identified.

Tanaka is thus tweaking its model (and not specifically an individually weighted multivariate model, as in the claimed invention) using hindsight -- based on subsequently acquired data. In contrast, the claimed invention only utilizes past collected data to generate a model, and then quantifies the contribution of each of the variables chosen to be in the model (scoring formula) to the overall score. No additional data is needed to perform the claimed invention. In Tanaka the "variance" being measured – as in Fig. 2, "analysis of variance contributing factors" -- is the variance of the predicted results from the actual results, not a "variance" in the statistical sense based solely on the data available at the time the model was created. ¶ [0051] of Tanaka cited by the Examiner corroborates this reading. The model is corrected based on the "variance" calculated. The individual contributions of individual variables to some overall score within the assumptions of the model itself is of no concern.

It should be recalled that the purposes and aims of Tanaka and the claimed invention are significantly different. The claimed invention generates a multivariate statistical

model from values in a large database and a scoring formula based thereon. The scoring formula is assumed accurate, and the claimed invention is merely concerned with calculating the contribution of individual variables used in the model. This contribution is not immediately obvious to anyone using the model, such as, for example, an insurance agent, or a potential insured who queries the agent as to why he has received a low profitability score and was thus quoted with a high premium. The answer to such queries is the aim of the claimed invention, not how to better train the scoring formula as in Tanaka.

Hammond does not teach or suggest the creation of a multivariate individually weighted scoring formula from a larger set of collected data and then the assessment of the contributions to said scoring formula of the various individual variables in the formula. Hammond does not teach quantifying the contribution of each of the plurality of predictive variables to the score using various derived quantities from said predictive variables and their respective weights in the formula, as in the claimed invention. Thus, Hammond cannot cure the deficiencies of either Summerel or Tanaka, taken individually or in combination, as a reference against the independent claims.

Thus, independent claims 1, 8, 13 and 17 are urged as patentable over Summerell, Tanaka and Hammond, whether taken alone or in any combination.

It is further submitted that dependent claims 6-7, 9-12, 14 and 18-20 are also allowable by reason of their various dependencies from independent claims 1, 8, 13 and 17, as well as for the additional features and structure recited therein. Notice to this effect is also earnestly requested.

On the basis of the foregoing remarks, Applicants respectfully submit that this application is now in condition for immediate allowance, and notice to this effect is earnestly

requested. Nonetheless, to facilitate such allowance, Applicants would like the opportunity to discuss the pending rejections and the reasons, as described herein, that they are misplaced, in the sincere belief that such a meeting would advance prosecution significantly and clear up any misunderstandings as to what the cited art actually describes. Applicants undersigned attorneys will contact the Examiner to arrange such a discussion.

No other fees are believed due in connection herewith. Please charge any fee deficiency or credit any overpayment to the undersigned attorneys' Deposit Account No. 50-0540.

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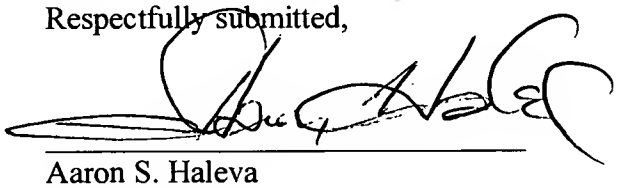
Respectfully submitted,



Aaron S. Haleva
Reg. No. 44,733
Randy Lipsitz, Esq.
Reg. No. 29,189
Richard L. Moss, Esq.
Reg. No. 39,782
Attorneys for Applicants
KRAMER LEVIN NAFTALIS & FRANKEL LLP
1177 Avenue of the Americas
New York, New York 10036
(212) 715-9100